

## REMARKS

Claims 1-20 have been rejected. Paragraphs [0018], [0019], and [0022] have been amended to address several typographical and/or grammatical errors. Claims 1, 9, 11 and 18 have been amended solely to further the prosecution of the application.

Claims 1-7, 9-11 and 16-20 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Neuermann et al. Independent claims 1 and 11 have been amended, as have dependent claims 9 and 18.

Claim 1 is directed to a system for monitoring defects in a structure. The system includes, among other features, “a power supply for supplying a direct current to a monitoring area of the structure and a reference” and “a processor having a multi-channel interface for simultaneously receiving potential drops”. The processor “is adapted to determine a ratio of the monitoring area potential drop to the reference potential drop indicative of a percentage change in a thickness of the structure”. Claims 2-7, 9 and 10 depend from claim 1.

Claim 11 is directed to a method for monitoring defects in a structure. The method includes, among other features, “supplying a direct current to a monitoring area of the structure and a reference”, “measuring a first potential drop across at least two contact points of the monitoring area while simultaneously measuring a first potential drop across at least two contact points of the reference”, and “simultaneously communicating each of said first potential drops to a processor to enable the processor to read each of the potential drops simultaneously”. Claims 16-20 depend from claim 11.

Neuermann et al. refers to a method and apparatus for detecting faults in a structure. Specifically, as enumerated in the Office action, Neuermann et al. describes a power supply, a measurement circuit, and a processor. The power supply described in Neuermann et al. is an alternating current power supply, not a direct current power supply as recited in claims 1 and 11. The distinction between alternating current and direct current is significant. For example, to be enabled to provide a full volumetric monitoring, including detection of flaws on the interior diameter of a structure, direct current is required. This is because alternating current does not provide the depth of

penetration through the thickness of the structure's material that is required to detect the effects of dimension changes to the internal diameter of the structure.

Neuelmann et al. further fails to teach or suggest either "a processor having a multi-channel interface for simultaneously receiving potential drops" as recited in claim 1 or "simultaneously communicating each of said first potential drops to a processor to enable the processor to read each of the potential drops simultaneously" as recited in claim 11. Neither Neuelmann et al., nor for that matter the other cited reference, teaches or suggests, either alone or in combination, the concept of communicating potential drops simultaneously, or in parallel, and therefore claims 1-7, 9-11 and 16-20 cannot be anticipated by Neuelmann et al. and cannot be considered unpatentable over the cited references. Simultaneous communication is significant in that it allows for the identification of systemic electrical noise. To illustrate the significance, suppose an event occurred that introduced electrical noise to the system, such as a pump being turned on, during the measurement and communication of potential drops. If the measurements are performed sequentially, as described in the cited art, some of the measurements will include the noise from the pump, while others may not. This noise cannot be differentiated from a signal of interest. If the measurements are performed simultaneously, as recited in the claims, all the measurements, including the reference, will include the noise from the pump, and therefore, that spike in noise can be accounted for and effectively canceled out by differential signal processing.

Claims 8 and 15 stand rejected under 35 U.S.C. § 103 as being unpatentable over Neuelmann et al. in view of Hognestad. Claim 8 depends from claim 1, and claim 15 depends from claim 11. Applicant respectfully traverses this rejection.

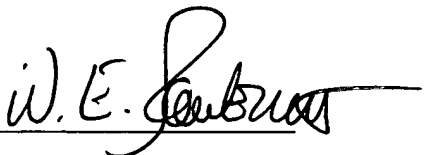
For at least the reasons provided above with regard to the rejection of claims 1-7, 9-11 and 16-20, applicant submits that claims 8 and 15 are patentable over the cited references. Neither of the cited references, either alone or in combination, teaches or suggests "a processor having a multi-channel interface for simultaneously receiving potential drops" as recited in claim 1 or "simultaneously communicating each of said first potential drops to a processor to enable the processor to read each of the potential drops simultaneously" as recited in claim 11.

Claims 12-14 stand rejected under 35 U.S.C. § 112, first paragraph as failing to describe in the specification recited subject matter in such a way as to enable one skilled in the art to make and/or use the invention. Specifically, the Office action draws attention to the recitation of "measuring a second potential drop across the at least two contact points of the monitoring area and a second potential drop across the at least two points of the reference with no current supplied" as recited in claim 12. Applicant respectfully traverses this rejection.

The measurement recited in claim 12 is used to determine the level of stray voltages measured on a structure. Voltages such as thermocouple voltages, stray ground loop voltages and the like are collected during such a measurement. After these stray voltages are measured, the data is used to correct the voltage measured when the current is turned on. Paragraphs [0032] through [0035] on pages 9 and 10 of the application provide greater explanation of the recitation found in claim 12, and applicant respectfully submits that the disclosure relevant to this recitation is more than adequate to teach one skilled in the art to make and/or use the invention.

For at least the aforementioned reasons, applicant respectfully requests withdrawal of the rejections and allowance of claims 1-20. Should the Examiner believe that anything further is needed to place the application in even better condition for allowance, the Examiner is requested to contact applicant's undersigned representative at the telephone number below.

Respectfully submitted,

By 

William Powell  
Reg. No. 39,803  
General Electric Company  
Building K1, Room 3A68  
Schenectady, New York 12301  
Telephone: (518) 387-4530

Dec 14, 2004